

DISCUSSION OF THE AMENDMENT

Claim 1 has been amended by replacing "non-squarish, the surface roughness of the particles is smooth, and the degree of circularity of the particles is about 1" with --spherical with a ratio of long axis diameter to short axis diameter being about 1, and the surface roughness of the particles with a ratio of the square of perimeter to the projected area measured based on SEM photographs being about 1--. The "spherical" limitation is supported in the specification at page 21, second full paragraph. The "surface roughness" limitation, while not explicitly stated in the specification, can be measured directly from Fig. 2 of the specification by digitalization thereof, as shown in Fig. 3 **attached herewith**. In other words, the limitation is inherently described in the specification.

No new matter is believed to have been added by the above amendment. With entry thereof, Claims 1-20 will remain pending in the application. Claims 1-5, 7 and 10-20 are active; Claims 6, 8 and 9 stand withdrawn from consideration. However, Claim 6 is subject to rejoinder.

REMARKS

The rejections under 35 U.S.C. § 102(b) of Claims 1-5, 7, and 10-20 as anticipated by U.S. 5,190,738 (Parent) or U.S. 5,283,542 (Ochiai et al) are respectfully traversed.

As recited in above-amended Claim 1, the invention is a flame synthesized aluminum nitride filler-powder comprising elements Al, O and N, or comprising elements Al and N, wherein the particle size of the powder is included within the range of 0.001 to 500  $\mu\text{m}$ , the mean particle size thereof is within the range of 1 to 100  $\mu\text{m}$ , the external shape of the particles is spherical with a ratio of long axis diameter to short axis diameter being about 1, and the surface roughness of the particles with a ratio of the square of perimeter to the projected area measured based on SEM photographs being about 1.

The Examiner finds that Parent (even though Parent's process of making is different from that recited in the claims) and Ochiai et al each anticipates the presently-claimed invention.

Parent discloses a process for producing unagglomerated single crystals of aluminum nitride (AlN) described as approximately spherical and having diameters in the range of 10-100 microns, by a carbothermal reaction modified by employing an alkali metal oxide as a crystal growth (grain growth) promoter and/or catalyst (column 2, line 43ff).

Ochiai et al discloses a high-thermal-conductivity filler, which may be AlN, and which is described as preferably a combination of particles, including spherical particles having an average particle diameter of from 20 to 90  $\mu\text{m}$  (column 3, lines 57-68).

As demonstrated below, neither Parent nor Ochiai et al anticipates or otherwise renders the present claims unpatentable. Indeed, the structure of the claimed aluminum nitride filler-powder is different from that of the applied prior art and indeed, is believed to be the only such material in the world having properties the same as an ideal circular material. Specifically, it is submitted that the claimed aluminum nitride filler-powder has a circularity

and surface roughness not possessed by the prior art. As discussed above, these parameters can be measured by the digitalization of Fig. 2 of the specification, as shown in Fig. 3 **attached herewith**.

The particulate spherical shape parameters measured are shown in the next Table:

	Particulate Spherical Shape Parameter	
	Elongation Percentage	Roughness Percentage
Fig. 2 of Present Invention	1 (1.2)	1 (1.4)
Ideal Circle	1 (1.0)	1 (1.1)

The spherical outer shape and smooth particle surface of the presently-claimed aluminum nitride filler-powder is deemed to be unique, by reason of its being formed by flame synthesis.

Fig. 1, **attached herewith** (a copy of which was also attached with the previous amendment), graphically demonstrates differences in mean particle diameter, shape, and roughness between the presently-claimed invention, and the AlN of Parent and Ochiai et al. Specifically, "Present invent" shows a product of the present invention which is "Direct LPG firing" gas-phase process powder. On the other hand, the AlN of both Parent and Ochiai et al is shown to be the result of a solid-state sintering process wherein the AlN has a hexagonal crystal structure, and a mean particle diameter > 10  $\mu$ m, with a "squarish" shape.

A further difference between the present invention and Parent is shown in Fig. 2, **attached herewith** (a copy of which was also attached with the previous amendment). The product of Parent includes non-impurities in the crystal structure of AlN, but includes a non-AlN element as an impurity in the product powder as a whole. The product of the present invention, on the other hand, includes non-impurities in the crystal structure of AlN but no non-AlN element as an impurity in the product powder as a whole.

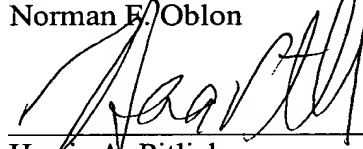
For all the above reasons, it is respectfully requested that the rejections over prior art be withdrawn.

The rejections of Claims 1-5, 7 and 10-19 under 35 U.S.C. § 112, first and second paragraphs, are respectfully traversed. Indeed, the rejections are now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that they be withdrawn.

All of the presently pending and active claims in this application are now believed to be in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected Claim 6, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

Respectfully submitted,

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